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January 8, 2007 (final)

Mr. Joseph F. Tulimieri
Executive Director
Cambridge Redevelopment Authority
One Cambridge Center
Cambridge, MA 02142

Subject: Kendall Square Urban Renewal Area
2006 Traffic Count Program and Trip Generation Analyses

Dear Mr. Tulimieri:

Fay, Spofford & Thorndike, LLC (FST) is pleased to submit this summary annual update of the Kendall Square Urban Renewal Area (the "Area") traffic count program to reflect May 2006 traffic conditions in the Area in compliance with the Area's Section 61 Finding requirements. Also included in this letter is an updated evaluation of the Area's existing trip generation characteristics compared to earlier projections FST made in connection with Plan Amendment # 7 in our letter dated January 28, 2005. Year 2006 tenant/employee travel surveys and parking garage data compiled by Boston Properties, LLP and Jones Lang LaSalle during the months of July and September have also been analyzed and summarized. The 2006 count program represents the twelfth year of the annual count update program.

Task I - Traffic Count Program

Figure 1 illustrates the program of ATR and the manual vehicle count locations conducted within the Area. Copies of the ATR and manual count field sheets are provided in the attached Technical Appendix. The latest automatic traffic recorder count program was conducted during the fourth week in May 2006. Counts were conducted at the following locations:

- Main Street, east of Ames Street (May 22 - 26).
- Broadway, east of the Mid-Block Connector (May 22 - 26).
- Binney Street, west of Fifth Street (May. 22 - 26).
- Third Street, north of Broadway (May 22 - 26).
- Vassar Street, southwest of Main Street and the Western Connector (May 22 - 26).

Additionally, on Tuesday, May 23, 2006, manual vehicle counts were conducted to determine drop-off/pick-up activity and ins/outs from the Cambridge Center East and North garages between 7 AM - 9 AM, 11 AM - 1 PM, and 4 PM - 6 PM in the following seven block face areas:

- Main Street, between Ames Street and Wadsworth Street.
- Main Street, between Ames Street and Vassar Street.
- Broadway, between the Mid-Block Connector and Third Street.
- Broadway, between the Mid-Block Connector and Binney Street.
- Mid-Block Connector, between Main Street and Broadway.

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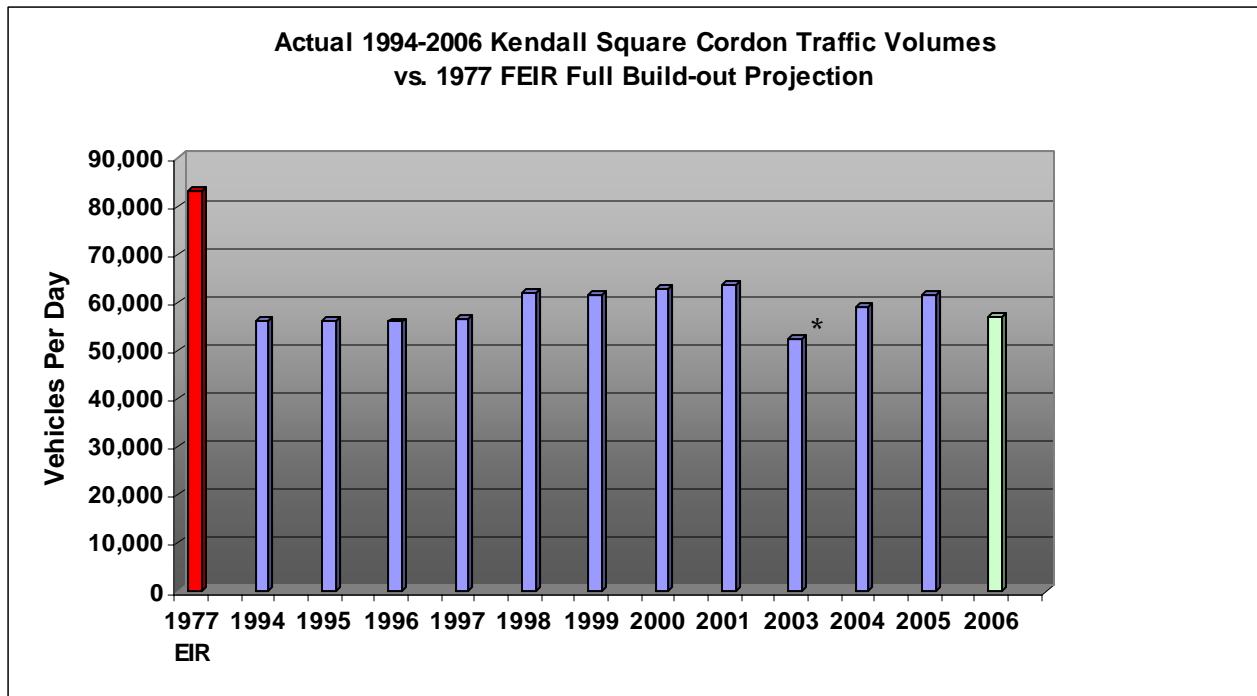
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Figure 1

- Western Connector, between Main Street and Broadway.
- Binney Street, in the vicinity of the Cambridge Center North Garage driveways.

Refer to the Technical Appendix for detailed automatic and manual count data. Table 1 provides a comparison of the Average Annual Weekday Traffic volumes (AAWDT) projected in the 1977 FEIR to the Area’s AAWDT volumes counted by FST during 1989-2006. Locations of the 1994-2006 AAWDT volumes summary comparison are illustrated on Figure 2. During the twelve-year period between 1994 and 2006, the Area’s AAWDT volumes have varied between 52,500 and 63,750 vehicles per day. Overall AAWDT volumes measured in 2006 were comparable those measured a dozen years ago in 1994, even though the Area has added more than 1 million square feet of gross floor area. While actual Area trip generation has grown; it has grown relatively proportional to the levels measured in 1994. However, the background traffic in the Area may be declining as Cambridge traffic diversions may have declined following substantial completion of the Central Artery/Tunnel project.



* Vassar Street was under construction during the 2003 count program and open to one-way traffic only.

Two types of field data were collected manually -- entering and exiting vehicles to/from the Cambridge Center East and North Garages, and curbside drop-off/pick-up activities on Area streets and in designated zones at the local land uses. A summary of this data, by type and location, is contained in Table 2, which compares year 2006 to year 2005 manual count data compilations.

Between the 2006 and 2005 manual count programs, the total occupied development square footage in the Area has increased by nearly 8%. The Parcel 3 development and Cambridge Center West parking garage in the block bounded by Main Street to the south, Ames Street to the east, Broadway to the north, Galileo Gallilei Way was under construction and partially open.

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Table 1

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INSERT FIGURE 2

AAWDT MAP

Table 2 - 2005/6 volume comparisons

During the same period, measured overall trip generation during the combined AM, mid-day, and PM peak hours increased by under 3%, inclusive of drop-off/pick-up activity. Area trip generation increased approximately 1% during the AM peak hour, was approximately 15% lower during the mid-day, and increased approximately 16% during the PM peak hour. The year 2006 count program took place during a period when drop-off/pick-up activity was 34% of all trip making, within the average range of drop-off/pick-up activity observed during prior years, but lower than that measured in 2005 (41%). Overall rates of AM, mid-day, and PM peak hour trip generation from Area developments are generally comparable to trip generation rates found during previous count programs.

During the combined AM, mid-day, and PM peak hours, Cambridge Center East, North, and West garage activity increased by approximately 14% compared to the year 2005. Year 2006 drop-off/pick-up activity decreased overall by approximately 17% compared to the year 2005. During the 2006 count program, the Area's 2006 drop-off/pick-up activity represented approximately 30% of its actual AM, 42% of its actual mid-day, and 34% of its PM peak hour traffic generation. Drop-off/pick-up activity continues to represent the most significant variable in the Area's trip generation totals. Binney Street remains the only roadway that has exceeded its projection of average weekday volumes at full buildout provided in the 1977 EIR. ***Overall, actual year 2006 average weekday volumes measured on the Area roadway cordon are approximately 32% below those projected at full buildout of the Area in the 1977 EIR.***

As it has in prior years, the AM peak hour within the Area varies by location but typically occurs between the one-hour period from 8 AM to 9 AM. The Area's PM peak hour also varies by location but typically occurs during 5 PM to 6 PM. Count data indicates that the mid-day peak hour is typically between 12:00 Noon and 1 PM.

Table 3 provides a breakdown of the existing year 2006 land use quantities and types within the Area, and compares these development quantities to the maximum Area development permitted under Plan Amendment No. 7. As of May 2006, buildings in the Area contained approximately 2,381,700 square feet of gross floor area (sf GFA). This represents approximately 83% of the Area's maximum approved build-out potential of 3,077,100 gross square feet with Area Plan Amendment No. 7.

FST's January 28, 2005 letter to you contained estimates of AM peak hour, PM peak hour, and daily trip generation projected for the Area at maximum buildout with Area Plan Amendment No. 7. In that letter, trip generation rates (i.e., trips per 1,000 sf GFA of development) were developed for each of the development land use types using the ITE Trip Generation manual. FST adjusted these rates to reflect the Area's localized proximity to transit, walk-in activity, employer shuttles, carpool promotion, etc. The adjusted trip generation rates, verified by eleven years of counts performed between 1994-2005, were used as the basis for trip generation estimates associated with the maximum buildout condition under MEPA-approved Area Plan Amendment No. 7. Table 4 provides a summary of adjusted trip generation rates for Area land uses from FST's January 28, 2005 letter.

Table 3

Kendall Square Urban Renewal Project Area
 Existing 2006 and Future Development Quantities
 By Land Use Category¹

LAND USE TYPE	2006 EXISTING	PROJECTED MAXIMUM AREA DEVELOPMENT WITH PLAN AMENDMENT NO. 7
Biotech Manufacturing	189,500	214,550
General and Technical Office	1,769,700	1,977,550
Retail	90,000	90,000
<i>Multi-family Residential</i>	0	275,000 ²
Business Hotel	190,000	190,000
Hotel	<u>330,000</u>	<u>330,000</u>
TOTAL	2,569,200	3,077,100

1 Quantities indicate square feet (sf) of Gross Floor Area (GFA) from Plan Amendment # 7.

2 The multi-family residential land use category increased by 75,000 square feet under approved Plan Amendment # 7.

Table 4

Kendall Square Urban Renewal Project Area
 Adjusted Trip Generation Rates¹

LAND USE TYPE	AM PEAK HOUR	PM PEAK HOUR	DAILY
Biotech Manufacturing	0.48	0.49	2.48
General and Technical Office	0.62	0.55	4.41
Hotel	0.46	0.48	5.71
Business Hotel	0.35	0.38	4.39
Retail	0.26	1.71	13.79
Multi-family Residential²	0.26	0.27	2.84

- 1 Trips per 1,000 sf GFA based on trip generation adjustments made in FST's January 28, 2005 letter concerning Plan Amendment No. 7.
- 2 Rate per unit, assuming 1,000 gsf/unit.

Table 5 applies adjusted trip generation rates from FST's January 28, 2005 letter on the traffic impacts of Plan Amendment No. 7. Table 5 contains an estimate of the number of trips projected for land uses in the Area assuming existing 2005 development quantities from Table 3 above. From Table 5, combined AM and PM peak hour trips to/from the Area constitute approximately 23.5% of the Area's 2006 projected total daily trip ends (i.e., 1,431 AM peak hour + 1,451 PM peak hour trips represent 23.5% of the 12,238 daily trips).

Table 6 provides a summary comparison of projected 2006 Area AM and PM peak hour trip generation (from rates contained in the FST's January 28, 2005 letter and summarized in Table 5) to 2006 rates calculated from measured 2006 Area ground counts (from Table 2). Table 6 also contains a comparison of 2006 daily Area trip ends based upon measured AM and PM peak hour volumes to 2006 daily trip end volumes based on the adjusted trip generation rates contained in the Plan Amendment No. 7 analysis and reiterated in Table 5.

Table 5

Kendall Square Urban Renewal Area
Adjusted ITE Rate Trip Generation Computations for May 2006¹

LAND USE TYPE	Gross Floor Area	AM Peak Hour		PM Peak Hour		Daily	
	(000's SF)	RATE	TRIPS	RATE	TRIPS	RATE	TRIPS
Biotech Manufacturing	189.5	0.48	91	0.49	93	2.48	470
General and Technical Office	1769.7	0.62	1,097	0.55	973	4.41	7,804
Business Hotel	190	0.35	67	0.38	72	4.40	836
Hotel	330	0.46	152	0.48	158	5.71	1,884
Retail	90	0.26	23	1.71	154	13.79	1,241
Multi-family Residential	0	0.26	0	0.27	0	2.84	0
TOTAL	2,569.2		1,430		1,450		12,238

1 Trips per 1,000 gsf GFA adjusted to reflect assumed high use of transit and other non-single occupant vehicles per FST's January 28, 2005 letter concerning Plan Amendment No. 7.

Table 6

Kendall Square Urban Renewal Area
Actual vs. Projected 2006 Trip Generation

	AM PEAK HOUR ¹	PM PEAK HOUR ¹	DAILY TRIP ENDS
2006 PROJECTED (FORECAST) ²	1,430	1,450	12,238
2006 EXISTING ³	1,263	1,331	11,038 ³
NET DIFFERENCE (%)	(- 13%)	(-9%)	(- 11%)

1 AM and PM peak hour trips represent both entering and exiting vehicle trip ends.

2 Predicted trip totals are based on adjusted trip generation rates developed for FST's January 28, 2005 letter regarding Area Plan Amendment No. 7 and the 2006 Area development quantities reported in Table 3 of this correspondence.

3 Refer to Table 2 for existing May 2006 AM and PM peak hour trip counts. Daily trip ends were **estimated** from the actual AM and PM peak hour trip generation totals and their expected relationship to daily trip generation based upon the relationship of AM and PM peak hours to daily generation reported in Table 5 (adjusted ITE rates).

From Table 6 on the previous page, the year 2006 actual trip generation for Area uses in the AM peak hour is 13% lower than the level calculated by applying the Amendment No. 7 trip generation projection methodology (1,263 trips versus 1,430 trips). Similarly, actual PM peak hour trip generation is 9% lower than the projected volume from the Amendment No. 7 trip generation projection methodology (1,331 versus 1,450 trips). Area development continues to generate traffic at rates generally lower than projected. Daily trip ends to and from Area land uses during the year 2006 were 11% lower than using the 2005 Plan Amendment No. 7 analysis methodology.

Task II - Review of Tenant/Employee Travel Surveys

Two types of tenant/employee travel surveys were reviewed: 1) a survey by Boston Properties and Jones Lang LaSalle of their tenants; and 2) surveys of tenant garage use in the North, West, and East Cambridge Center garages.

Boston Properties and Jones Lang LaSalle conducted 2006 surveys of its Cambridge Center tenants to provide an indication of employee travel mode choices and use within the Area. This information is supplemental to the actual count data. Refer to the Technical Appendix for a copy of the overall survey results.

The tenant survey was completed by a total of 25 firms and businesses representing 1074 employees or approximately 23% of the Area's approximately 4,759¹ total employees. A summary table of employees by building prepared by the Cambridge Redevelopment Authority is provided in the Technical Appendix. Overall tenant survey results are generally consistent with prior year surveys. Respondents to the 2006 tenant survey indicated that their employees arrive to Kendall Square as follows:

- 37 % drive alone;
- 54 % use MBTA services;
- 8 % walk or bicycle; and
- 1 % carpool with 2 or more people.

Approximately 63% of respondents indicated they use alternative modes of transportation to and from work rather than drive alone. The proportion of employees who indicated they drive alone increased by 3% compared to respondents of the 2005 survey. However, the proportion of respondents who report using MBTA services increased by 13% over those who responded to the 2005 survey. Navimedix, the largest of the employer respondents, continues to estimate that 69% of its employees use the MBTA. Approximately 96% the responding Area businesses start business operations between 7:00-9:00 AM and 88% conclude business operations between 5:00-6:00 PM. Of the respondents, 64% offer flextime hours. Of employers surveyed, 68% offer incentives for free or subsidized parking (i.e., driving) incentives, while 56% offer MBTA (i.e., transit) pass use incentives. Approximately 79% of the employers offering transit incentives also offer driving incentives. Overall, survey responses are compatible with earlier FST projections. Survey responses continue to indicate a very strong reliance on alternative travel modes compared to typical suburban areas where 90% or more employees drive alone to work sites.

¹ Source: Cambridge Redevelopment Authority (refer to Technical Appendix for a table of this data).

The *ITE Trip Generation* report (7th Edition, 2003) indicates that the vehicle trips per employee for the General Office category are 0.48 during the AM peak hour and 0.46 during the PM peak hour. The May 2006 update data indicates that 0.27 vehicle trips are actually generated per employee during the AM peak hour. During the PM peak hour, 0.30 vehicle trips are actually generated per employee. ***Therefore, during 2006, actual employee-based trip generation rates were 35%-44% lower than unadjusted ITE employee-based AM and PM peak hour rates estimated for the Area.***

Task III - Review of Area Parking Garage Data

We assume the May 2006 traffic counts at the garages reflect average annual conditions. Detailed hour-by-hour garage occupancy data was compared to garage data collected for a similar period during May 2005.

The number of trips destined for the Area that park outside the Area, and subsequently would not have been accounted for in the data collection program is likely to be small. Similarly, the amount of vehicles that may have parked in the Area, and were not destined for the Area is also likely to be small. Copies of comparative weeklong garage surveys are contained in the attached Technical Appendix.

Boston Properties and Jones Lang LaSalle provided a weeklong usage survey of the Cambridge Center North, Cambridge Center West, and Cambridge Center East parking garages for the period from May 22-26, 2006. These records indicate that a maximum of 1,716 tenant employees who leased monthly parking in the East, West, and North Cambridge Center garages and transient parkers were parked in the garages simultaneously. This is approximately the same as the May 2005 survey period that found 1,721 parked vehicles, at maximum occupancy. If the number of employees is assumed to be relatively constant throughout the year, during peak demand times, the Area averaged approximately 0.36 occupied parking spaces per employee during 2006 – somewhat lower than the 0.43 occupied parking spaces per employee found during the 2005 survey.

Table 7 summarizes and compares average trip activity data during the AM and PM peak hours when one-day garage surveys were conducted on May 23, 2006 and May 24, 2005. The AM peak hour at both garages continues to occur from 8 to 9 AM, and the PM peak hour continues to occur between 5 to 6 PM. Findings of the garage peak hours are consistent with findings for the Area's street peaks (from the ATR data) and the Area's drop-off/pick-up activity.

Table 8 contains an estimated comparison of peak parking accumulation, as well as a comparison to the total spaces available in the Cambridge Center North garage during the week average for May 2005 and May 2006. Because there was approximately an 8% increase in development square footage within, the measured AM and PM peak hour garage activity increased approximately 7% between the three Area garages. There was a decrease in activity at the East and North garages, as some parking motorists transferred their vehicles to the more convenient West garage.

This count program accurately accounts for the vast majority of vehicle trips related to the Area. This finding is due to the proximity of the East, West, and North Garages to the Area's land uses, the modest price differential to surface lots external to the Area, and the slight decrease in overall traffic growth on the Area's roadways.

Table 7

Kendall Square Urban Renewal Project Area
Cambridge Center East and North Garages
 Summary and Comparison of 2006-2005 Garage Vehicle Trip Activity¹

LOCATION	May 23, 2006 ²		May 24, 2005 ³		PERCENT CHANGE BETWEEN MAY 2006 AND MAY 2005	
	AM	PM	AM	PM	AM	PM
Cambridge Center North Garage	279	294	318	340	-12%	-14%
Cambridge Center East Garage	239	223	272	244	-12%	-8%
Cambridge Center West Garage	115	106	N/A	N/A	N/A	N/A
COMBINED TOTAL	633	623	590	584	+7%	+7%

- 1 Volumes represent total vehicular movements entering and exiting the two garages.
- 2 Volumes represent a typical one-day sample on Wednesday, May 23, 2006.
- 3 Volumes represent a typical one-day sample on Tuesday, May 24, 2005.

Table 8

Kendall Square Urban Renewal Project Area
Cambridge Center East, North, and West Parking Garages
 Summary and Comparison of Peak Parking Occupancy - 2005 to 2006

LOCATION	CAPACITY Number of Spaces ¹	PEAK PARKING OCCUPANCY 5/23-5/27/05 ³		PEAK PARKING OCCUPANCY 5/22-5/26/06 ⁴	
		Number Occupied	% of Capacity	Number Occupied	% of Capacity
Cambridge Center North Garage	1,170	985	84%	867	74%
Cambridge Center West Garage	0 - 730 ⁵	N/A	N/A	363	50%
Cambridge Center East Garage ¹	764	736	96%	486	64%
COMBINED TOTAL	1,934 (2,664)⁶	1,721	89%	1,716	64%

- 1 Does not include 75 spaces in the Marriott “nest”; garage capacity has been decreased from 767 to 764 since 2005, according to Jones Lang LaSalle occupancy data.
- 2 Average peak garage occupancy data for the Cambridge Center East Garage and for Wednesday, May 25, 2005, for the Cambridge Center North Garage.
- 3 Average peak garage occupancy data during the week of October 27-31, 2003, for the Cambridge Center East Garage and during the week of October 6-10, 2003 for the Cambridge Center North Garage.
- 4 Average peak garage occupancy data during the week of May 24-28, 2004 for the Cambridge Center North and East Garages.
- 5 Partial capacity available at the Cambridge Center West Garage during May 2006. This garage was under construction but unavailable during the May 2005 survey.
- 6 Number in parentheses is the year 2006 Area parking capacity; the 2005 capacity is listed above.

As expected, with a portion of the West Garage available for use during 2006, the Cambridge Center North and East garages overall experienced lower peak occupancy rates than found during the 2005 survey. The Cambridge Center East garage had a substantial decline in its peak occupancy rate in 2006 compared to 2005. A significant number of Cambridge Center employees have found the West Garage to be a more convenient alternative than the East Garage. The 74% occupancy of the Cambridge Center North garage also indicates a reduction in its peak demands, but to a lesser extent than the East Garage. While the Area is well served by public transportation, the West Garage is expected to provide enough additional parking to ensure that Area parking demands are accommodated within the Area.

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Conclusion

'Background' cordon traffic volumes measured during May 2006 were found to be approximately comparable than those measured back in 1994, even though more than a million square feet of new development has been occupied in the Area. Because garage volumes generally have continued to grow as the Area land uses grow, background traffic must have declined, perhaps in part due to substantial completion of the Central Artery/Tunnel Project that may have diverted some traffic from Cambridge and the Kendall Square area.² The Area continues to generate vehicle trips at rates far lower than those contained in the *ITE Trip Generation* report.

Actual Area vehicle trip generation rates -- including garage trips plus drop-off/pick-up trips -- continue to be similar to, but lower than, those contained in FST's January 28, 2005 Amendment No. 7 letter to you. ***We therefore conclude there is no 'significant variation' to report regarding the traffic generation and its impacts within the Area.***

Please do not hesitate to contact me should you have questions on the study update or require additional information.

Very truly yours,

FAY, SPOFFORD & THORNDIKE
By

Gary L. Hebert, P.E., PTOE
Vice President

GLH:gh
LG-038B:000E57
Attmts: Technical Appendix

cc: Mr. M. Cantalupa, Boston Properties
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² The 2006 traffic count program was performed in May prior to the closure of portions of the Central Artery/Tunnel ramps for repairs during the latter part of 2006.